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ACCOUNTING PROFESSION AND ACCOUNTING EDUCATION RESPONSE IN THE ERA OF BLOCKCHAIN DEVELOPMENT: BIBLIOMETRIC AND LITERATURE REVIEW

İbrahim Erem ŞAHİN [1]
Dedi KURNIAWAN [2]

Abstract

Over the past decade, blockchain development has infiltrated the accounting industry's business procedures. This circumstance undoubtedly affects the accounting profession. Accountants must integrate blockchain to enhance the quality of accounting information and financial reporting through necessary changes. Enhanced competencies are essential for accountants to execute blockchain implementations effectively. Universities, as institutions that produce numerous accounting graduates, must take action. Universities can respond by incorporating blockchain content into the accounting curriculum. This study aimed to meticulously investigate the adoption of blockchain and its correlation with the accounting profession and accounting education. This study employs bibliometric analysis to examine 1,713 terms associated with blockchain and the accounting profession throughout the Ebsco, ProQuest, and ScienceDirect databases. An extensive analysis of 30 articles related to blockchain and the accounting profession over the past decade was conducted. This study identified a strong correlation between the accounting profession and accounting education in the implementation of blockchain technology. The results of this study can be utilized by stakeholders, including corporations, accounting professional associations, and academic institutions.

Keywords ***:*** *Blockchain, Accounting, Profession, Education.*

JEL Classification ***:*** *A2, M41, O14.*

[1]Selçuk Üniversitesi, İ.İ.B.F., İsletme Bölümü, eremsahin@selcuk.edu.tr ORCID: 0000-0002-0442-8499
[2]PhD student, Politeknik Negeri Batam, Management and Business Department, Accounting Study Program, dedi@polibatam.ac.id ORCID: 0000-0001-9362-9374.

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BLOKZİNCİR GELİŞİMİ ÇAĞINDA MUHASEBE MESLEĞİ VE MUHASEBE EĞİTİMİNİN TEPKİSİ BİBLİYOMETRİK VE LİTERATÜR TARAMASI

Öz

Geçtiğimiz on yılda, blockchain gelişimi muhasebe iş prosedürleri alanına sızmıştır. Bu durum kuşkusuz muhasebe mesleğini de etkilemektedir. Muhasebeciler, gerekli değişiklikler yoluyla muhasebe bilgilerinin ve finansal raporlamanın kalitesini artırmak için blok zincirini entegre etmelidir. Bir muhasebecinin blok zinciri uygulamasını yürütebilmesi için gelişmiş yetkinlikler gereklidir. Çok sayıda muhasebe mezunu veren kurumlar olarak üniversiteler harekete geçmelidir. Üniversiteler, blok zinciri içeriğini muhasebe müfredatına dahil ederek yanıt verebilirler. Bu çalışma, blok zincirinin benimsenmesini ve bunun muhasebe mesleği ve muhasebe eğitimi ile ilişkisini titizlikle araştırmayı amaçlamıştır. Bu çalışmada, Ebsco, ProQuest ve ScienceDirect veri tabanlarında blok zinciri ve muhasebe mesleği ile ilişkili 1.713 terimi incelemek için bibliyometrik analiz kullanılmıştır. Son on yılda blok zinciri ve muhasebe mesleği ile ilgili 30 makalenin kapsamlı bir analizi yapılmıştır. Bu çalışma, blockchain teknolojisinin uygulanmasında muhasebe mesleği ile muhasebe eğitimi arasında güçlü bir ilişki olduğunu ortaya koymuştur. Bu çalışmanın sonuçları, şirketler, muhasebe meslek birlikleri ve akademik kurumlar dahil olmak üzere paydaşlar tarafından kullanılabilir.

Anahtar Kelimeler ***:*** *Blokzincir, Muhasebe, Meslek, Eğitim.*

JEL Sınıflandırması ***:*** *A2, M41, O14*

INTRODUCTION

Over the past decade, humans and technology have become increasingly interdependent. The development of technology is ongoing, and it has become almost completely embedded in every facet of human existence. The introduction of new technology unquestionably affects every activity that humans make. The effectiveness and efficiency of the actions carried out continue to improve. As a consequence, people are growing increasingly dependent on technology, while new technologies continue to emerge at an increasing frequency. It is becoming increasingly difficult to distinguish between the two in terms of their connection. Blockchain technology is a relatively new development that is quickly becoming an indispensable component of human endeavors.

According to Meth (2019), blockchain is a system that connects a set of interconnected blocks, each carrying transaction data in a sequential order. According to Patel, Migliavacca, and Oriani (2022), the deployment of blockchain technology has the potential to reduce transaction costs and durations. The implementation of blockchain technology is something that the Company is interested in doing for this reason. This technological advancement is being increasingly incorporated into the company's commercial operations. The accounting business process is altered by blockchain technology. The standard of information produced may improve if blockchain technology is integrated into the accounting business process. Economic transactions are converted into programming code using blockchain technology (Fortin & Pimentel, 2024). This occurs before accounting information is used for decision-making purposes. According to Han, Shiwakoti, Jarvis, Mordi, and Botchie (2023), blockchain technology enables users to collaborate on auditing, verifying, and approving any accounting information generated.

Additionally, blockchain technology can help mitigate information imbalance. There is no doubt that this circumstance has a significant impact on the accounting profession. The viewpoints that accountants have on the accounting business process will be transformed by blockchain technology. To prevent

themselves from being overtaken by other occupations, accountants need to demonstrate that they are proficient in this area.

When it comes to addressing technological changes, accountants are required to engage in a variety of preparations. It is possible to make preparations to improve one's competency through training for the adoption of blockchain technology installations. Additionally, qualified accountants have the opportunity to further their education by enrolling in classes that are relevant to blockchain technology. It is undoubtedly true that these two alternative preparations are not instantaneous; instead, they require a considerable amount of time. This circumstance presents an opportunity for educational institutions to begin making preparations during the early phases of the college experience. Educational institutions can incorporate blockchain technology into their accounting programs to enhance efficiency and transparency. According to Stern and Reinstein (2021), academic programs have a responsibility to immediately train students by providing lecture materials on blockchain and other developing technologies. This is necessary due to the increasing adoption of technology within the accounting profession.

As blockchain is a relatively new technology, further research is still needed. According to Vincent, Skjellum, and Medury (2020), the implementation of blockchain technology presents several challenges, including investment costs, data accessibility, privacy, and security concerns. These challenges are similar to those faced by earlier technologies. To keep pace with the rapid expansion of blockchain technology, businesses, accounting professionals, and educational institutions must acquire additional knowledge on blockchain technology deployment before adopting it. Consequently, it is necessary to conduct a review of previous research on the implementation of blockchain technology. The purpose of this study is to identify emerging trends in blockchain research and conduct an in-depth examination of various papers that discuss blockchain technology and its impact on the accounting profession. The findings of this research may subsequently guide decision-making in accounting procedures and policies, especially within the accounting profession.

I. METHODOLOGY

The author performed an inquiry using the search phrase "Blockchain and the Accounting Profession." The databases searched using the inputted keywords are Ebsco, ProQuest, and ScienceDirect. The assessment focused on English-language publications from the last five years. The search results indicate that 1,713 terms related to blockchain and the accounting profession were identified in papers published over the past five years. A search was conducted on 1,713 distinct samples to determine the most prevalent terms and their interrelationships. The author selected thirty publications most relevant to the study topic and conducted a comprehensive evaluation of the papers from these journals.

II. FINDING

II.I. Bibliometric Analysis

Table 1. Top Keywords

No	Keyword	Occurrences
1	Accounting	83
2	Artificial Intelligence	73
3	Blockchain	60
4	Industry 4.0	30

5	Automation	28
6	Decision Making	21
7	Big Data	20
8	Professional	20
9	Education	20
10	Curricula	19

Source: Author's calculation

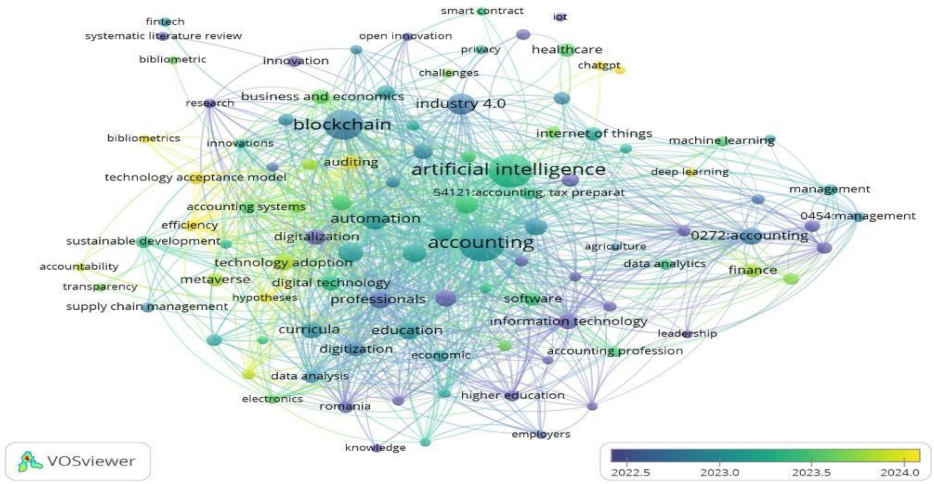

Figure 1. Cartographic Analysis
Source: Author's calculation

Table 1 above shows the top ten most frequently occurring keywords over the past decade, with a minimum of five occurrences in the Ebsco, ProQuest, and Sciencedirect databases. By including the keywords' blockchain' and 'accounting profession', accounting is in first place with 83 occurrences, followed by artificial intelligence with 73 occurrences, and in third place, blockchain with 60 occurrences. Positions four to seven are still related to technology. Positions eight, nine, and ten are related to professionals, education, and curriculum. Search topics related to blockchain and the accounting profession are dominated by accounting topics and various technologies used in accounting business processes, including blockchain. Additionally, the findings from the bibliometric analysis also reveal a relationship between blockchain and the accounting profession. The number of words in professional, educational, and curriculum materials demonstrates this.

The first image illustrates a relationship between two words. The words that appear most often are "accounting" and "artificial intelligence," which have a relationship, and the distance between the two is quite close. This means that researchers usually study the topic of accounting and artificial intelligence. Meanwhile, the words "accounting" and "blockchain" also have a relationship. However, the distance is not as close as that of artificial intelligence. The topics of accounting and blockchain are also often studied, but not as much as those of artificial intelligence. Figure 1 also shows the years of research on blockchain and the accounting profession. Research topics on accounting and blockchain were primarily conducted in 2023.

On the other hand, research on artificial intelligence is expected to be undertaken mainly between 2023 and 2024. For 2024 and above, research on ChatGPT begins.

II.II. Review of the Research

Table 3. Top Organizations and Country

No	University	Country	Citations
1	RMIT University	Australia	537
2	Brunel University London	United Kingdom	481
3	Rochester Institute of Technology	United States of America	370
4	Bentley University	United States of America	370
5	Al Ain University	United Arab Emirates	282
6	Nanyang Technological University	Singapore	228
7	York University	Canada	189
8	University College Dublin	Australia	161
9	The University of Queensland Business School	Australia	161
10	The University of Queensland Business School and TC Beirne School of Law	Australia	161
11	Concordia University	Canada	148

Source: Author's calculation

According to the number of citations, the eleven most prestigious universities and the countries of origin of researchers who are active in blockchain-related research within the accounting profession are listed in Table 3, which can be found above. Researchers from RMIT University in Australia were responsible for the research that received the most citations, which totaled 537. In addition, a study conducted by researchers from Brunel University London ranks second, with 481 citations. After receiving 370 citations, the research conducted at the Rochester Institute of Technology in the United States ranks third. Researchers lead the majority of investigations undertaken in this field. The United States of America and Canada will come in second and third place, respectively, behind Australia as the country of origin. They agree with the study's findings, which were conducted by Patel, Migliavacca, and Oriani (2022), on the application of blockchain technology in the banking and financial industry. There has been significant progress in blockchain research by developed countries, including the United States, the United Kingdom, China, and Australia. According to Mishra, Singh, Mishra, and Demirkol (2025), who investigated the application of blockchain technology in the automotive supply chain, their findings support the conclusions. According to the findings of Mishra, Singh, Mishra, and Demirkol (2025), the countries of China, India, the United Kingdom, the United States, and Australia were the most prolific producers of works on this topic. The author's findings, as well as previous research, indicate that countries with economically and infrastructurally developed economies are addressing the topic of blockchain in a significant manner. These nations quickly adapt to technological innovations, such as blockchain, which are becoming increasingly

prevalent. They argue that technical improvements would have a favorable influence on the development of their nation's economy as well as its infrastructure.

Table 4. Top Journal

No	Journal	Documents	Source
1	International Journal of Accounting Information Systems	5	Sciendirect
2	Australian Accounting Review	3	Ebsco
3	European Conference on Innovation & Entrepreneurship	2	Ebsco
4	Journal Of Emerging Technologies in Accounting	2	Ebsco
5	Current Issues in Auditing	2	Ebsco

Source: Author's calculation

Table 4, located above, lists the five foremost publications that extensively cover blockchain technology and the accounting profession. Five publications have been released in the International Journal of Accounting Information Systems, which ranks first. Subsequently, the Australian Accounting Review successfully published three articles. In conclusion, two publications were released by the European Conference on Innovation and Entrepreneurship, as well as the Journal of Emerging Technologies in Accounting and Auditing, respectively. ScienceDirect and Ebsco successfully identified these journals within their databases. The Ebsco database yielded the majority of the results.

Table 5. Research on Blockchain and the Accounting Profession

No	Author	Research Aim	Sample	Findings
1	Schmitz & Leoni (2024)	This article is to examine the main topics related to blockchain within the realms of accounting and auditing, drawing on academic research, professional reports, and online sources.	297 Academic Sources	The research identifies that the predominant topics in academic literature and professional sources are to governance, transparency, and trust concerns within the blockchain ecosystem, blockchain-facilitated continuous audits, applications of smart contracts, and the transformative change in the roles of accountants and auditors.
2	Alkhwaldi, Alidarous, & Alharasis (2024)	The objective of this article is to examine the determinants that influence the behavior of Blockchain users from the perspective of accountants and auditors, specifically from the perspective of the Unified Theory of Acceptance and Use of Technology (UTAUT) model, and to determine the implications for their performance.	There are 329 existing and prospective users of blockchain in the accounting and auditing sector of Jordan	According to structure path experiments, human behavior toward Blockchain-based systems is significantly influenced by performance expectation, social influence, Blockchain transparency, and Blockchain efficiency. Blockchain technology also enhances performance expectancy. This is in direct opposition to the notion that behavioral intention is influenced by effort expectancy. Furthermore, user intention influences utilization. The outcome variables of this study—user satisfaction and knowledge acquisition—are significantly influenced by blockchain users.
3	Tan & Low (2019)	This research fills a gap in the literature by examining the influence of blockchain technological features on the deployment of blockchain-based AIS, with consequences for the accounting profession.	Academic Sources	This study suggests that blockchain will change AIS database engines, where data is compiled and stored. Accountants will no longer lead the development of blockchain-based accounting information systems. They will presumably continue to prepare the company's financial statements as required under corporate governance regulations. Accountants will impact validator selection and accreditation rules, and may be the last resort validator.
4	Smith (2018)	This paper examines current studies in the fields of blockchain and accounting, hypothesizes how this technology may impact the profession, and provides a comparative analysis of how procedures may evolve as this technology becomes more widely adopted.	Academic Sources	Blockchain technology, both alone and in combination with other technical and information breakthroughs, is presenting both opportunities and challenges in accounting. One thing is sure: given these improvements, markets and management expectations will continue to shift. All practitioners and scholars should investigate the change to a more forward-looking and consultative role in audit and attestation.
5	Spano, Massaro, Ferri, Dumay, & Schmitz (2022)	This study aims to provide an overview of the topics discussed in the papers published in the AAAJ special issue, 'Blockchain in Accounting, Accountability, and Assurance.	8 Academic Sources	Blockchain has several ramifications for accounting, auditing, accountability, governance, and the accounting profession. However, blockchain is still developing. Blockchain research usually involves four phases. Recent research on the interface between blockchain, virtual reality, and the metaverse warrants further study.

6	Sethibe & Malinga (2021)	This paper aims to empirically investigate the potential adoption of blockchain technology among accounting and auditing professionals.	21 Accounting and Auditing Professionals	Blockchain technology awareness is low, according to the report. Key benefits of blockchain technology include enhanced traceability, increased trust, improved transparency, effective fraud detection, increased operational efficiency, and real-time reporting. Accounting and audit professionals doubt the readiness of blockchain technology despite its benefits. This study helps scholars and practitioners understand blockchain technology innovation and its possibilities in accounting and auditing.
7	Qasim & Kharbat (2020)	This research seeks to evaluate the need to update the accounting curriculum to align with the requirements of industrial technology.	Academic Sources	This article proposes a comprehensive reform of the accounting curriculum to align current accounting knowledge with the industry's pertinent information technology skills.
8	Liu, Wu, & Xu (2019)	The writers explain the differences between permissionless and permissioned blockchains. They then discuss the effects of blockchain on auditing and the pros and cons of the two types.	Academic Sources	The researchers conclude by providing specific recommendations for auditors to adapt, adjust, and enhance their role as strategic partners in blockchain implementation.
9	Petrović, Tanasić, & Radovanović (2022)	This study aims to investigate the implications of blockchain technology within the accounting profession and the public sector.	Academic Sources	Blockchain technology is hindered by institutional mistrust and a lack of regulation. Thus, without precise knowledge of future permissible and restricted uses, blockchain technology poses a risk that many legal institutions may not readily adopt.
10	Abdennadher, Grassa, Abdulla, & Alfalasi (2022)	This research aims to investigate the perspectives of accountants and auditors regarding the application of blockchain technology in the UAE, in light of the government's goal to transition 50% of government transactions to blockchain platforms by 2021.	19 Accounting Profession	This study demonstrates that blockchain impacts accounting by documenting transactions, preserving evidence, and securing company activities. The data suggest that blockchain is transforming auditing methods and strategies. Blockchain can augment traditional auditing with low-cost, decentralized auditing and automated audit evidence. Cryptocurrencies and blockchain will not automate corporate bookkeeping; instead, they will change it. Assurance services will develop blockchain with the awareness and involvement of accountants and auditors.
11	Dragoş, Gabriela, Daniela, & Costin (2024)	This study examines the impact of new technology on the accounting profession. The most accurate answers are obtained by reviewing professional literature and relevant websites.	Academic Sources	Accountants must adapt to artificial intelligence and acquire new skills, as it can enhance forecasting accuracy by analyzing large datasets. Instead of following patterns, we must learn, grow, and adapt to technology. Accountants will assume strategic roles and enhance financial decision-making by leveraging technology.
12	Karajovic, Kim, & Laskowski (2019)	This post will thoroughly examine how blockchain technology will affect accounting and the industry.	Academic Sources	The long-term effects of blockchain will be discussed philosophically and conceptually. This essay will address concerns about the widespread use of blockchain with critiques.

13	Sheldon (2018)	The spread of accountant malfeasance among stakeholders is a problem. The AICPA and NASBA gather misconduct reports centrally; however, they may not acquire enough information from stakeholders. This paper addresses blockchain implementation issues.	Academic Sources	Near-real-time updates, an immutable and searchable ledger, and settings that restrict unilateral ledger management may help blockchain solve aggregation and sharing issues. Although blockchain adoption is years away, it's important to study the accounting profession's existing difficulties it may solve. As technology advances and more people become aware of it, blockchain will enter mainstream accounting. As I stated in this essay, blockchain may become so widespread that all accounting specialists must utilize it.
14	Han, Shiwakoti, Jarvis, Mordi, & Botchie (2023)	Blockchain data is immutable, append-only, shareable, verifiable, and consensus-driven; therefore, this research examines how it can enhance accounting transparency and trust, as well as how professionals can utilize it to make more informed decisions.	179 Academic Sources	The article discusses four main topics in blockchain accounting literature: event-based accounting, real-time accounting, triple-entry accounting, and continuous auditing. Agency theory and stakeholder theory are employed to assess how blockchain can mitigate information asymmetry and enhance stakeholder collaboration.
15	Vincent, Skjellum, & Medury (2020)	This article provides an enterprise blockchain architecture that improves blockchain connectivity, enabling auditors to utilize it for audit and assurance services.	IT Architecture	This study enhances the IT governance and blockchain literature by developing an adaptive blockchain architecture that meets the information needs of stakeholders. This is a first attempt to envision blockchain technology in accounting.
16	McCallig, Robb, & Rohde (2019)	This study seeks to provide a design for an accounting information system that enhances the representational validity of financial reporting data.	AIS system	Research recommends multiparty corporate data reporting and auditing security. Researchers believe public key cryptography and network analysis can locate a network. Researchers combined blockchain accounting data with privacy and transparency. Immutable storage, openness, and open data interchange may improve financial reporting. Auditors can help stakeholders find reliable information about entities, thereby increasing representational integrity.
17	Liu, Muravskyi, & Wei (2024)	This study builds on existing literature and conducts in-depth, unique research to evaluate the future development potential of blockchain accounting practices.	1.414 Articles	Blockchain technology in accounting information systems is expected to increase recording and reporting accuracy, according to researchers. Innovative blockchain technology offers a secure, transparent, and shareable accounting platform through a distributed ledger.
18	Akter & Kummer (2024)	This research examines the organizational characteristics that facilitate and hinder the implementation of blockchain in accounting, as well as the perceived advantages.	19 Experts and Accountants	Nine context-specific issues, including the difficulty of comprehending blockchain's accounting applications and advantages, its challenging integration with traditional accounting systems, and high adoption goal costs, were confirmed by this research. This research presents new empirical results based on accounting theories. These results may assist practitioners and accounting information systems scholars in understanding how context affects blockchain adoption in accounting.

19	Gilmour, Pandey, & Goldbarsht (2025)	This study examines the application of blockchain technology in beneficial ownership registries and has significant implications for the accounting field.	Corporate Ownership Disclosure Report	Researchers provide a new perspective on blockchain technology's role in corporate transparency, shedding light on 'digital trust.' The research links theoretical frameworks to beneficial owner record systems, enabling a better understanding of how new digital infrastructures impact accountants' compliance duties.
20	Suta & T´oth (2023)	This study employed a PRISMA-based Systematic Literature Review to investigate the applicability of blockchain technology in sustainable accounting.	59 Academic Sources	This study examines the underlying technologies, regulatory frameworks, and practical considerations that influence the adoption of blockchain for this purpose, as previously mentioned. Future research could combine blockchain with other future-proof technologies, such as digital accounting tools (e.g., XBRL) or hardware-based IoT in smart factories, to create new networks of quantifiable and traceable sustainability information.
21	Juma'h & Li (2023)	This research investigates the factors that influence auditors' adoption of blockchain technology.	118 Auditors	This study demonstrates how the desire to raise accounting standards, a crucial aspect of accounting and audit professionals' professional judgment, may influence their adoption of blockchain. This study encourages auditors to use blockchain technology.
22	Grosu, et al. (2022)	This paper examines the relationship between blockchain, accounting, and economic crime, as well as the benefits of incorporating blockchain technology into accounting systems.	5.584 Articles	A comprehensive mapping of the network that connects blockchain technology, accounting, and economic crime was the key finding. This mapping was accomplished using clustering algorithms.
23	Dashkevich, Counsell, & Destefanis (2024)	This project aims to develop, build, and test a blockchain-based accounting prototype—a Business Financial System (BFS)—that automates the conversion of transactional data from normal company operations into comprehensive financial reporting.	Blockchain Financial Statements	The Java implementation of the resulting BFS system is a prime example of the successful adoption of blockchain technology into accounting processes. This implementation showcases the potential of blockchain technology to validate transactions in real-time, maintain immutable records, and enhance both transparency and efficiency in financial reporting.

Source: Processing by the Author

Following a comprehensive review of publications sourced from multiple databases, the author curates and synthesizes the papers listed in Table 5, which pertain primarily to blockchain and the accounting profession. The article above also references accounting education. The subject of blockchain and accounting education is presented in Table 6 below.

Table 6. Research on Blockchain and the Accounting Education

No	Author	Research Aim	Sample	Findings
1	Novak, Barišić, & Žager (2022)	This article reviews research on blockchain and accounting. This research evaluates relevant literature to investigate how accounting education and curriculum may include blockchain technology.	Academic Sources	According to the analysis of current research on this topic presented in this paper, various solutions exist for incorporating blockchain education into accounting programs, either as a stand-alone course or as part of an existing course.
2	Stratopoulos (2020)	The purpose of this study is to provide an outline that offers basic knowledge related to blockchain to accounting students, enabling them to evaluate and prepare for the impact of blockchain on the accounting profession.	Experiment and Academic Sources	Drawing on my pedagogical experience and research, I suggest and explain how I use a blend of narrative techniques and scaffolding methods to focus on presenting the following subject: What is the rationale for acquiring knowledge about blockchain technology? (2) fundamental information (e.g., components of full transactions and double spending), (3) interactive activities to elucidate technical concepts such as hashing and proof-of-work (mining), and (4) blockchain applications in supply chain contexts.
3	Rezaee & Wang (2018)	This study investigates whether forensic accounting schools adequately meet the demand for knowledge and skills in blockchain and cryptocurrency.	78 Forensic Accounting	This study's findings provide significant insights into the consequences of incorporating blockchain and cryptocurrencies into forensic accounting curriculum, enhancing forensic accounting education.
4	Stern & Reinstein (2021)	Researchers explain how accounting and business academics can incorporate blockchain into their courses.	Online Course at Wayne State University (WSU)	The researcher recommends incorporating blockchain into the accounting curriculum based on her semester-long blockchain course. A semester is needed to understand blockchain technology, its potential, and—most importantly—its restrictions.
5	Atanasovski, Trpeska, & Lazarevska (2020)	This study aims to examine the implications of blockchain technology for the accounting and assurance profession by reviewing academic research articles, project reports, and relevant websites that address its implementation in the accounting sector.	Synthesizing Relevant Academic and Professional Views	This article identifies some potential advantages and drawbacks of blockchain technology in accounting and auditing, including its impact on professional employment. The primary advantages are enhanced confidence and dependability in accounting information, increased efficiency and effectiveness in financial statement audits, and a reduced chance of financial statement fraud. Although the advantages are apparent, we also emphasize significant technological challenges, including scalability, interoperability, confidentiality, and security.
6	Zhang, Ardakani, & Han (2021)	This article introduces a hypothetical blockchain-based protocol, referred to as the Smart Ledger, as an alternative to conventional methods for recording accounting information.	Computing Tasks Autonomously	A blockchain-based algorithm known as a smart ledger executes accounting ledger functions. Two blockchain mechanisms—FAT and HATE—authenticate it. The unchangeable nature of blockchain technology and the rules of accounting information

				recording make the smart ledger a hybrid system. If widely used, it might transform accounting practices and the profession.
7	Pimentel & Boulianne (2020)	This article aims to bridge the gap between practitioners and academics by providing an overview of both fields of literature and highlighting the points of intersection between them.	64 Articles & 41 Reports and Documents	The research suggests that practitioners and academics should collaborate to analyze cases that practitioners have witnessed and experienced. These collaborations will provide complementary viewpoints on places academics may not examine. Accounting researchers should also collaborate with colleagues from outside the business school. Research on blockchain architecture and business applications will benefit from close collaboration between technological and business experts.

Source: Processing by the Author

III. DISCUSSION

III.I Blockchain and the Accounting Profession

Spano, Massaro, Ferri, Dumay, and Schmitz (2022) assert that blockchain is a complex subject with extensive ramifications for accounting, auditing, accountability, the accounting profession, and governance. The advent of blockchain technology has yielded numerous advantages across diverse industries, including accountancy. Sethibe and Malinga (2021) identify the principal advantages of blockchain technology as the ability to trace transactions, establish trust, provide transparency, detect fraudulent activities, enhance operational efficiency, and facilitate real-time reporting. According to these findings, research conducted by Abdennadher, Grassa, Abdulla, and Alfalasi (2022) and Han, Shiwakoti, Jarvis, Mordi, and Botchie (2023) illustrates that blockchain substantially influences the accounting profession, especially concerning transaction recording, evidence storage, and the establishment of a secure environment for business transactions. Liu, Muravskyi, and Wei (2024) assert that blockchain is a transformative technology providing a tamper-proof, traceable, and shared platform for accounting information. The implementation of a distributed ledger system on the blockchain realizes this platform. The introduction of blockchain technology not only facilitates a fundamental transformation in financial record administration but also enhances security, transparency, and accuracy. Due to its capacity to enhance overall efficiency and minimize errors, blockchain technology has the potential to transform current accounting practices. Research findings indicate that blockchain technology is prompting auditors to modify their methodologies and practices. Blockchain technology can significantly enhance traditional auditing processes by offering a decentralized auditing system that is both economical and efficient, while also providing automated audit evidence.

Corporate accounting is likely to continue using its current methodology; however, it will be automated due to advancements in blockchain technology, which will enhance the precision of forecasts through the analysis of vast datasets. Additionally, the primary advantages encompass enhancing the reliability and accuracy of accounting information, accelerating ongoing financial statement audits, and mitigating the risk of financial statement fraud (Atanasovski, Trpeska, & Lazarevska, 2020). These represent but a fraction of the advantages. Enhancing the engagement and comprehension of accountants and auditors will enable blockchain technology to boost assurance services. Liu, Wu, and Xu (2019) assert that accountants and auditors must enhance their roles as strategic partners in the use of blockchain technology, necessitating the adaptation, modification, and elevation of their responsibilities. Dragoș, Gabriela, Daniela, and Costin (2024) assert that accountants will surely assume a strategic position. With the aid of technological improvements, they will be equipped to provide more educated suggestions regarding financial concerns. Accounting and auditing experts are skeptical regarding the preparedness of blockchain technology (Sethibe & Malinga, 2021). This persists notwithstanding the advantages above having been deliberated. If accountants fail to adapt to these technological advancements, the future of audit and attestation responsibilities will transition towards a greater emphasis on advisory roles (Smith, 2018). The adoption of blockchain-based Accounting Information Systems (AIS) will diminish the role of accountants as the primary authority. Under the corporate governance legislation, they are expected to remain accountable for the organization's financial accounts. Accountants will significantly influence legislation for the selection of validators and accreditation, and they may ultimately act as the final validator. Tan and Low (2019) assert that the use of blockchain-based accounting information systems is anticipated to revolutionize the roles of accountants. Accounting experts will remain in demand and retain their relevance should this transpire. Tan and Low (2019) observed that audits are essential in blockchain-based accounting information systems to assess the accuracy and integrity of financial statements. The digitization of the validation process can reduce error rates and costs associated with assurance and traceability. The immutable nature of blockchain data may lessen the likelihood of fraudulent activities and the motivations behind such actions. The blockchain-based Accounting Information System (AIS) does not inherently

ensure the truth and equity of financial accounts. This is because the AIS and its operations need the evaluation and testing of accounting decisions.

Zhang, Ardakani, and Han (2021) successfully developed an application widely known as a reliable ledger. A specific application of the accounting process utilizing blockchain technology is the smart ledger. An intelligent ledger employs a blockchain-based algorithm to perform accounting functions. Their legitimacy relies on two processes embedded inside the blockchain's architecture. These processes are referred to as Hierarchical Accounting Transaction Execution (HATE) and Fractional Accounting Transactions (FAT). A smart ledger is a hybrid system that integrates the principles of accounting information recording with the immutable characteristics of blockchain technology. If widely implemented, this could have a profound impact on accounting practices and the accounting profession. The study by Zhang, Ardakani, and Han (2021) exemplifies a tangible integration of blockchain technology with accounting standard practices. The study's findings may furnish accountants with a framework for developing analogous applications.

The implementation of blockchain technology faces considerable obstacles, including scalability, interoperability, confidentiality, and security issues, despite its evident advantages. Atanasovski, Trpeska, and Lazarevska (2020) contend that surmounting these problems will be arduous and restrict the extensive implementation of the technology in the foreseeable future. The implementation of blockchain technology is hindered by the lack of a regulatory framework and the pervasive skepticism and reluctance among institutions. The lack of a clear understanding of future permissions and restrictions renders the adoption of blockchain technology potentially risky, which may deter numerous legal organizations from adopting it (Petrović, Tanasić, & Radovanović, 2022). Vincent, Skjellum, and Medury (2020) contend that further hurdles must be addressed before the complete application of blockchain technology can be realized. The challenges encompass scalability, the procedure for granting public accounting firms access to transaction servers through the blockchain platform, the facilitation of a smooth transition for public accounting firms without considerable disruption, the identification of the suitable blockchain type (whether permissioned, permissionless, or hybrid), and the creation of an efficient mining algorithm that meets security standards without unduly taxing computational resources for servers and distributed systems hosting the blockchain.

III.II. Blockchain and the Accounting Education

In addition to influencing the accounting profession, blockchain technology also affects accounting education at educational institutions. The accounting profession and accounting education are fundamentally interconnected through essential elements. Qasim and Kharbat's (2020) research suggests that a comprehensive overhaul of the accounting curriculum is necessary to integrate existing accounting competencies with relevant information technology skills essential to the profession. Several researchers have explored the integration of blockchain technology into university accounting programs. Rezaee and Wang (2018) offer significant insights into integrating blockchain technology and cryptocurrencies into the forensic accounting curriculum, thereby enhancing the quality of forensic accounting education. According to AACSB standards, students trained in forensic accounting and familiar with blockchain and cryptocurrency are more equipped to address the problems brought by emerging technologies. The second benefit of incorporating blockchain and cryptocurrencies into forensic accounting education is that it enables students to acquire fundamental knowledge, platforms, concepts, and practices associated with blockchain and cryptocurrency, along with their practical applications. Third, forensic accounting students can acquire the skills essential for detecting and preventing fraud by comprehending transaction verification processes, identifying financial anomalies and illicit transactions, and scrutinizing suspicious activities utilizing blockchain technology. In the domain of blockchain technology and cryptocurrencies, several opportunities exist for study and education. These potentials encompass the development of forensic accounting and auditing instruments based on blockchain technology, alongside the need to comply with relevant regulations, laws, and standards. Rezaee and Wang (2018) and Stratopoulos (2020) advocate for

the inclusion of diverse themes related to blockchain technology in the accounting curriculum. Initially, concerns about blockchain technology do not require an excessive technical understanding. This is due to accounting students generally having a restricted comprehension of programming. A comprehensive understanding of the advantages and implications that blockchain technology can offer to the accounting profession is essential. Ultimately, scaffolding methods serve as an effective tool for imparting concepts and terminology associated with blockchain technology. The fourth point asserts that students must engage actively and constructively in the learning process by utilizing case studies and collaborative projects. Blockchain teaching must focus on students in the accounting curriculum, supplemented by oversight from accounting educators responsible for the technical facets of blockchain technology.

Presenting the topic of blockchain in isolation during a single lecture session is unfeasible. Stern and Reinstein (2021) conducted research indicating that students require an entire semester to have a thorough understanding of blockchain technology. This comprehension must encompass both the potential and, crucially, the constraints of the technology. A minimum of two to three weeks of teaching time is necessary to furnish pupils with a thorough introduction to the basics of blockchain technology. At the national level, the majority of Accounting Information Systems courses contain extensive content, making it challenging to remove sufficient material to accommodate comprehensive coverage of blockchain. Accounting students continue to seek a more thorough understanding of blockchain technology, even if a single week may be enough to provide a basic introduction to blockchain and its limits across various corporate and societal applications. A course titled "New Technologies in Accounting," encompassing blockchain, robotic process automation, machine learning, data analytics/big data, and other modern technical trends in accounting, can function as a substitute for an extensive semester-long course on blockchain. This is particularly viable for educational institutions that provide blockchain courses across diverse disciplines. A considerable number of accounting students with a keen interest in technology seek opportunities to enroll in a semester-long course on blockchain. Accounting programs with a substantial student enrollment can provide a course on "blockchain in accounting," focusing on accounting applications and internal controls.

Universities may collaborate with external partners to teach accounting and blockchain technology. The study conducted by Pimentel and Boulianne (2020) supports the establishment of collaboration between practitioners and academics to facilitate comprehensive assessments of the challenges encountered by practitioners in the field. This partnership will yield valuable insights into regions that are often obscure or inaccessible to experts. Consequently, supplementary viewpoints will be presented. The researchers strongly advocate for accounting professionals to collaborate with colleagues from other disciplines beyond their business schools. Opportunities to advance research that will shape the future of blockchain technology will emerge via the synergistic combination of specialized commercial and technological expertise.

CONCLUSION

The accounting sector has benefited from the advancement of blockchain technology over the past decade. The integration of blockchain technology into accounting has necessitated adjustments in both the accounting profession and educational institutions. This study aims to explain the research trends in blockchain and conduct a comprehensive analysis of several articles that examine its impact on the accounting profession and accounting education. The researchers identified many relevant terms related to “Blockchain and the Accounting Profession” by searching the databases of Ebsco, ProQuest, and ScienceDirect. The report shows that extensive research has been conducted on blockchain technology and its applications in accounting. These studies were mainly conducted in developed countries. The following countries are examples of countries that have integrated the technology into all aspects of their company operations. Publications dedicated to accounting and technology include these studies. The accounting

profession must adapt by increasing its proficiency in integrating blockchain into financial reporting practices. This conclusion is derived from a comprehensive analysis of the literature on blockchain and the accounting profession. Numerous studies have demonstrated the application of blockchain technology in accounting business processes across various scenarios.

Furthermore, universities that produce accounting graduates must incorporate blockchain information into their curricula. This complements the accounting profession itself. In practice, universities can collaborate with accounting professional associations to develop curricula that are tailored to industry needs. This activity can be initiated with focus group discussions, followed by the technical aspects of curriculum development.

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